UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: April 6, 1988

SUBJECT: N.L. Industries, Inc. - Granite City RI/FS PRP laboratory data review

FROM: Raymond Piccione

TO: B. Bradley

Dear Mr. Bradley:

Attached is the review of N.L. Industries PRP laboratory data you requested. In general, the laboratory performed acceptably although fewer QC checks were performed than in normal Contract Laboratory Program procedures.

I assume you have a copy of the case with its reporting forms. I have photocopied the reporting forms for the Second, Third and Fourth Rounds groundwater analyses where I have made data qualification notations. If you do not have the forms available or if you would like further clarification of the review, please feel free to call.

Sincerely,

Raymond V. Piccione

886-1974

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: April 4, 1988

SUBJECT: N.L. Industries, Inc. Granite City RI/FS PRP laboratory data review.

FROM: Raymond Piccione, chemist CRL/ESD

TO: B. Bradley, RPM

This review concerns the N.L. Industries, Inc. Granite City site and covers 19 soil/sediment and 26 water samples which were variously analyzed for metals, total dissolved solids and sulfate. The review will reference each of the five submitted booklets individually by title.

Slag Pile Runoff booklet

Four sediment and four water samples are reported for lead analyses only.
Sediment samples 7-001 to 7-004.

The laboratory gives the furnace detection limit as 5 µg/l but blanks are reported only to 200 µg/l. Since the lead concentrations are so high in the samples, the higher detection limit used will not affect the data quality.

The reported soil values on the Laboratory Report forms are apparently in mg(metal)/kg(wet soil weight). To convert to a common reference of mg(metal)/kg(dry soil weight), divide the wet value by the fraction of solids. For example for ~~BTS~~ 7-001 : $\frac{67{,}000 \text{ mg/kg wet}}{0.451 \frac{\text{dry wt}}{\text{wet wt}}} = 149{,}000 \frac{\text{mg}}{\text{kg dry}}$

The sample values are very much higher than the spike amount added. Normal instrument fluctuations can be expected to be of comparable magnitude to

the added spike, rendering the information obtained from the spike recovery of questionable importance. The duplicate result is acceptable and the sediment results may be used as is.

Stormwater samples 8-001 to 8-004

The results are acceptable for use as is.

Soils Analysis booklet

Fifteen soil samples were analyzed for lead only. If desired, divide the wet weight by the fraction % solids to convert to the dry weight basis. The results are acceptable.

Second Round Groundwater Analysis booklet

Nine water samples were analyzed for total lead and other metals and lead, filtered. The total dissolved solids and sulfate analyses are reported without benefit of the raw data, so no judgment is made on the quality of these two analyses.

For the filtered lead analysis, the spike recovery is 146% and the last calibration verification is high. Since the results are biased high, all samples undetected for lead are acceptable. The results for ~~D56~~ 106-99 and 108-99 are estimated with having a high bias, i.e. actual sample result may be lower. These are marked 'j' on the reporting form.

The last calibration verification (CV) for filtered cadmium is 117% and is high. Samples 106-99 and 103-00 should be estimated (j). The value for 108-99 is unreliable because two readings, one above the highest standard and one below the instrument detection limit (idl), were averaged. It may be taken as a positive hit, however.

Sample 101-00 for filtered arsenic is estimated. The sample was offscale and was diluted and analyzed in another QC run. The CV was low and the sample should be estimated as having a possible low bias, i.e. the actual sample value may be higher. This sample is marked with a 'j' on the Laboratory Report form.

For filtered nickel, two spikes were 99% and 76% recovery; the laboratory control sample was 73% recovery; and the last CV was 85% and low. Estimate these nickel data as having a possible low bias (j).

The raw data shows that filtered samples were analyzed for Cr, Hg, Sb, Ag and selenium, although these are not indicated as such on the Laboratory Report form.

The spike recovery for filtered Cr is 83% and the last CV is 82%. Take these chromium results as estimates and having a possibly low bias.

O'BRIEN & GERE LABORATORIES, INC.

Laboratory Report

Second Round g.w. analysis

CLIENT NL INDUSTRIES JOB NO. 2844.012.517

DESCRIPTION Waters

Sample Type 4

DATE COLLECTED 4-6,7,8-87 DATE REC'D. 4-16-87 DATE ANALYZED

Description	ID1 ID2 102 00	ID1 ID2 101 00	ID1 ID2 107 11	ID1 ID2 107 99	ID1 ID2 106 99	ID1 ID2 105 99	ID1 ID2 108 99	ID1 ID2 103 00	ID1 ID2 104 00
Sample #	D5680	D5681	D5682	D5683	D5684	D5685	D5686	D5687	D5688
TOTAL LEAD	0.28	-	-	-	0.72	-	0.22	-	-
LEAD, FILTERED	<0.005	<0.005	<0.005	<0.005	0.013 J	<0.005	0.009 J	<0.005	<0.005
CADMIUM, FILTERED	<0.001	<0.001	<0.001	<0.001	0.002 J	<0.001	5.2 J	0.002 J	<0.001
BARIUM, FILTERED	<1.	<1.	<1.	<1.	<1.	<1.	<1.	<1.	<1.
ARSENIC, FILTERED	<0.005	J 0.070	<0.005	0.014	<0.005	<0.005	<0.005	<0.005	<0.005
IRON, FILTERED	<0.1	20.	<0.1	8.1	<0.1	<0.1	<0.1	<0.1	<0.1
ZINC, FILTERED	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	44.	<0.05	<0.05
MANGANESE, FILTERED	0.124	4.22	0.139	0.422	0.359	0.284	29.4	<0.025	0.026
NICKEL, FILTERED	<0.01 J	<0.01 J	<0.01 J	<0.01 J	<0.01 J	<0.01 J	0.70 J	<0.01 J	<0.01 J
COPPER, FILTERED	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
TOTAL DISSOLVED SOLIDS	610.	530.	850.	1300.	770.	620.	[illegible]400.	550.	400.
SULFATE	210.	190.	300.	550.	260.	180.	[illegible]850.	170.	130.
CHROMIUM	J <0.005	J <0.005	J <0.005	J <0.005	<0.005 J	<0.005 J	<0.005 J	<0.005 J	<0.005 J
MERCURY	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
ANTIMONY	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SILVER	J <0.005	J <0.005	J <0.005	<0.005 J	<0.005 J	<0.005 J	<0.005 J	<0.005 J	<0.005 J
SELENIUM	J <0.002	J <0.002	J <0.002	<0.002 J	0.003 J	<0.002 J	<0.002 J	0.003 J	0.003 J

Methodology: Federal Register — 40 CFR, Part 136, October 26, 1984

Units mg/l (ppm) unless otherwise noted

Comments

J result is estimated with a possible high bias

J result is estimated with a possible low bias

Authorized *[signature]*

Date May 20, 1987

OBG Laboratories, Inc.
[illegible] Buckley Rd / Syracuse, NY 13221 / (315) 457-1494

Second Round G.W. Analysis cont'd.

The last CV had 88% recovery for silver, filtered and the results may be slightly low biased.

The results for selenium, filtered may be biased low. The last CV is 80%.

Analytes without qualification as presented above are acceptable as they are reported.

Third Round Groundwater Analysis booklet

Six water samples were analyzed for total lead, various metals, filtered, sulfate and total dissolved solids (TDS).

For TDS, no reference solution was available and no blank was run. Although the duplicate results are good, the data should be taken as estimates with unknown bias if any. These are marked 'J' on the Laboratory Report form.

Only samples 110, 109 and 109 duplicate were analyzed for total lead. No spike was run and no qualification can be made of the data.

The last CV is 112% for Cd, filtered and the results may have a slightly high bias. The positive hits are marked 'j', while the others below detection limits are acceptable

The last CV for As is 114% and there may be a slight high bias to the results. The values above detection limit are marked 'j' and may be taken as estimates.

OBG LABORATORIES, INC.

Third Round gw. analysis

Laboratory Report

CLIENT NL - TARACORP JOB NO. 2844.012.517

DESCRIPTION

DATE COLLECTED 8-12-87 DATE REC'D. 8-14-87 DATE ANALYZED

Description		107D	108D	101	110	109	109 Duplicate
Sample #		G0204	G0205	G0206	G0207	G0208	G0209
TOTAL DISSOLVED SOLIDS		1300. J	4600. J	650. J	1000. J	530. J	530. J
SULFATE		490.	1800.	160.	280.	78.	75.
LEAD	Filtered	<0.005	0.009	<0.005	<0.005	<0.005	<0.005
CADMIUM	Filtered	<0.001	6.9 j	0.007 j	0.004 j	<0.001	<0.001
ARSENIC	Filtered	<0.005	0.007 j	0.101 j	<0.005	<0.005	0.006 j
IRON	Filtered	6.6	<0.10	22.	<0.10	<0.10	<0.10
MANGANESE	Filtered	0.40	25.	4.9	1.0	0.11	0.10
NICKEL	Filtered	j <0.01	0.94 j	<0.01 j	0.02 j	<0.01 j	<0.01 j
ZINC	Filtered	<0.02	44.	0.10	0.02	<0.02	<0.02
CHROMIUM	Filtered	-	-	-	j <0.005	j <0.005	j <0.005
BARIUM	Filtered	-	-	-	<1.	<1.	<1.
MERCURY	Filtered	-	-	-	t <0.0002	t <0.0002	<0.0002 t
SELENIUM	Filtered	-	-	-	j <0.002	j <0.002	<0.002 j
SILVER	Filtered	-	-	-	<0.005	<0.005	<0.005
ANTIMONY	Filtered	-	-	-	<0.02	<0.02	<0.02
COPPER	Filtered	-	-	-	<0.01	0.01	<0.01
LEAD		-	-	-	0.016	0.007	<0.005

Methodology: Federal Register — 40 CFR, Part 136, October 26, 1984

Units: mg/l (ppm) unless otherwise noted

Comments: J value is estimated with unknown bias
j value is estimated with a high bias
j value is estimated with a possible low bias
t value is estimated due to exceeding the holding time. Possible low bias.

Authorized: D. A. Burdon

Date: October 6, 1987

OBG Laboratories, Inc.
Box 4942 / 1304 Buckley Rd. / Syracuse, NY / 13221 / (315) 457-1494

The filtered nickel analysis has a final cv of 85% and the results may have a low bias and are estimates.

Only samples 110, 109 and 109 duplicate were run for the filtered elements Cr, Ba, Hg, Se, Ag, Sb and copper.

The last cv for Cr and for Se are low. Chromium and selenium are estimated.

The holding time for mercury was exceeded. The results for Hg are estimated with a possible low bias. These results are marked with a 't' on the Reporting form.

FOURTH ROUND GROUNDWATER ANALYSIS booklet

Seven water samples were analyzed for total lead, various metals, filtered, total dissolved solids (TDS) and sulfate.

For TDS, no reference solution was available and no blank was run. The data should be used as estimated values and are marked 'J' on the Laboratory Report.

The raw data for MW101 for cadmium was not found. The remainder of the Cd data is acceptable.

For manganese, filtered, the value for MW109 is printed in the raw data but not identified there as such. The value for sample MW107D is listed in the raw data as MW109. However the values on the reporting form appear to be the correctly associated values. The manganese data are acceptable.

OBG LABORATORIES, INC.

Fourth Round g.w. analysis

Laboratory Report

pg. 5a

CLIENT NL - Granite City JOB NO. 2844.012.517

DESCRIPTION

DATE COLLECTED 11-12-87 DATE REC'D. 11-13-87 DATE ANALYZED

Description	MW101	MW110	MW109	MW1070	MW1080	MW1070 Duplicate	MW110 Duplicate
Sample #	G2723	B2724	G2725	G2726	G2727	G2728	G2729
SULFATE	170.	294.	68.	480.	1825	474.	289.
TOTAL DISS. SOLIDS	690. J	1000. J	500. J	1232. J	4400. J	1248. J	980. J
LEAD, FILTERED	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
CADMIUM, FILTERED	<0.001	<0.001	<0.001	<0.001	7.9	<0.001	<0.001
ARSENIC, FILTERED	0.071	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
IRON, FILTERED	22.	<0.10	0.4	5.8	<0.10	5.5	<0.10
MANGANESE, FILTERED	5.5	0.99	0.28	0.37	29.	0.38	0.98
NICKEL, FILTERED	<0.01	0.01	<0.01	<0.01	0.81	<0.01	0.01
ZINC, FILTERED	0.02	<0.02	<0.02	<0.02	44.	<0.02	<0.02
BARIUM, FILTERED	-	<1.	<1.	-	-	-	<1.
CHROMIUM, FILTERED	-	4 <0.005	4 <0.005	-	-	-	<0.005 4
SELENIUM, FILTERED	-	<0.002	<0.002	-	-	-	<0.002
SILVER, FILTERED	-	<0.005	<0.005	-	-	-	<0.005
ANTIMONY, FILTERED	-	<0.02	<0.02	-	-	-	<0.02
COPPER, FILTERED	-	<0.01	<0.01	-	-	-	<0.01
MERCURY, FILTERED	-	<0.0002	<0.0002	-	-	-	<0.0002
LEAD	-	<0.005	<0.005	-	-	-	<0.005

Methodology: Federal Register — 40 CFR, Part 136, October 26, 1984

Units: mg/l (ppm) unless otherwise noted

Comments: J value is estimated with a known error

4 value is estimated with a possible error

Authorized: D.A. Brandon

Date: December 10, 1987

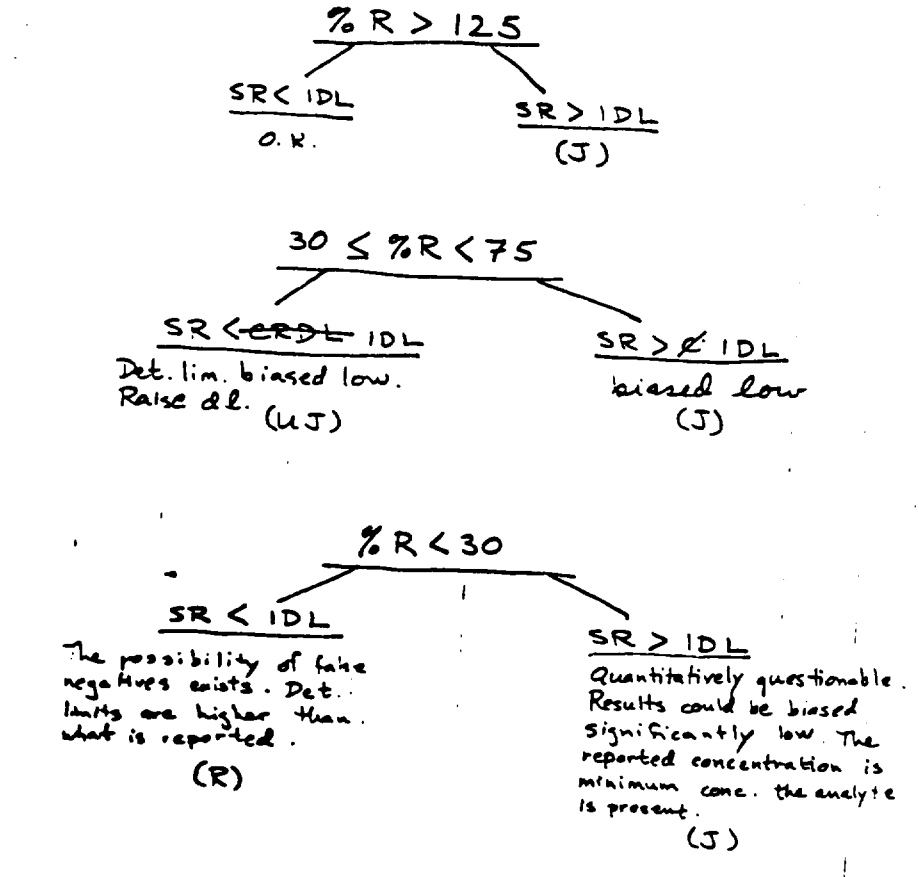
OBG Laboratories, Inc.
Box 4942 / 1304 Buckley Rd. / Syracuse, NY / 13221 / (315) 457-1494

Only samples MW 110, MW 109 and MW 110 duplicate were analyzed for the filtered metals Ba, Cr, Se, Ag, Sb, Cu, Hg and lead.

The initial calibration verification for Cr was low and chromium is estimated.

The last CV is 116% for Sb but since the readings are high and Sb was undetected, the data is acceptable.

Summary of Spike Recovery Data Qualification



SR: sample result
IDL: instrument detection limit
%R: % spike recovery

Illinois Environmental Protection Agency 2200 Churchill Road, Springfield, IL 62706

Refer to: L1190400007 MADISON CO.
TARACORP
SUPERFUND/TECHNICAL REPORTS

March 24, 1988

Steve W. Holt
Senior Envronmental Engineer
Environmental Control Department
NL Industries, Inc.
P.O. Box 1090
Highstown, NJ 08520

Brad Bradley 5HE-12
Project Manager
USEPA - Region V
230 S. Dearborn
Chicago, IL 60604

Gentlemen:

The IEPA has completed a review of raw data for the NL Taracorp site using USEPA's office of Emergency and Remedial Response "Laboratory Data Validation Guidelines for Evaluating Inorganics Analyses". Attached is a review summary which indicates the usability of data. All data should be used in reports on the site (e.g. RI or FS) according to these comments.

Should you require additional information, please contact me.

Sincerely,

Kenneth M. Miller

Kenneth M. Miller, Project Manager
Federal Site Management Unit
Remedial Project Management Section
Division of Land Pollution Control

KMM:tf/0779j,108

cc: Terry Ayers
Jim Shaw
Connie Sullinger
DLPC Fileroom

Filed

Illinois Environmental Protection Agency · P.O. Box 19276, Springfield, IL 62794-9276

MEMORANDUM

DATE: March 21, 1988

TO: Ken Miller

FROM: Jim Shaw Jim Shaw

SUBJECT: L119040000 -- Madison County
Granite City / National Lead
Review of Raw Data Groundwater Rounds 2, 3 & 4

The Division of Laboratories Quality Assurance Section (QAS) has completed a review of the raw data from rounds 2, 3 and 4 of the groundwater analyses at the above mentioned site. Detailed below, by round, is a review of the raw data provided by O'Brien and Gere to the IEPA in March '88. Detailed review is provided only for the data, involving Quality Control violations.

This review also includes comments on the data for Slag Pile, Soil and Groundwater analysis round 1 as represented by O'Brien and Gere's QA/QC summary in the Draft R.I. report. However I did not review any raw data from Slag Pile, Soil and Groundwater analysis round 1.

This report is not a review of O'Brien and Gere's QA/QC summary found in the Draft R.I. Appendix E

Conclusions:

Groundwater Round 1 Analysis. For the data in Groundwater Round 1 to be usable would require a parameter by parameter evaluation of the raw data (see Bina Fleck's memorandum of July 16,1987 for review of Round 1 Groundwater Analyses).

Groundwater Round 2 Analysis. No major management decisions should be based upon any Groundwater Round 2 data. 11 of the 16 parameters had QC violations. We consider this poor performance by the laboratory. We do not have any confidence in any of the data generated by the laboratory in the Groundwater Round 2 Analysis.

Groundwater Round 3 Analysis. The data for Groundwater Round 3 is, or can be made usable, as per the technical discussions which follows. The only exception to this is the mercury analyses. The mercury data is not usable nor can it be made usable. The overall performance of the laboratory for Round 3 was much improved over their performance in Round 2

Groundwater Round 4 Analysis. The data in Groundwater Round 4 is, or can be made usable, as per the technical discussions which follows. The overall performance of the laboratory was good.

Slag Pile Runoff Sediments & Stormwater Analysis. The data in Slag Pile Runoff Sediments & Stormwater is usable.

Soils Analysis. The data from the Soils Analysis is usable.

Slag Pile Analysis. The data in the Slag Pile Analysis is either usable or to be used as estimates, with two exceptions. The two exceptions are the Selenium and Zinc analyses. The Selenium and Zinc analyses are not usable. The Selenium and Zinc analyses are not to be used as estimates.

TECHNICAL REVIEW

Note: A % bias estimate that is negative means all reported results are possibly low by the % given in the estimate. A % bias estimate that is positive means all reported results are possibly high by the % given in the estimate.

Groundwater Analysis -- Round 2

For all parameters no Preparations Blanks were utilized. The purpose of Preparation Blanks is to monitor the analysis process in the laboratory for contamination. Since no Preparation Blanks were utilized, it is difficult to determine the usability of results that are near the Detection Limit.

For all parameters one of the calibration standards was used as the Initial Calibration Verification, not after but during the calibration. Therefore the Initial Calibration Verification's don't provide any information about the validity of the calibration curve.

Pb total Two of the data points (0.28 & 0.22 mg/L) are to be used as estimates. They should have been rerun by graphite furnace AA.

Pb filtered Spike & Continuing Calibration Verification both greater than QC limits. Data less than Detection Limit are usable, data greater than Detection Limit are to be used as estimates, estimate a positive bias in range of 20-40%.

Cd Laboratory Control Sample less than QC limit, Continuing Calibration Verification greater than QC limit. All data are estimates due to low Laboratory Control Sample recovery. Combination of low Laboratory Control Sample and high Continuing Calibration Verification make estimate of bias impossible.

As (5-4-87) The O'Brien and Gere Labs " BLANKS AND LABORATORY CONTROL SAMPLES " reporting form appears to have a transcription error for control sample A5879 for As filtered 5-4-87. The reporting form shows a recovery of 0.020 mg/L whereas the O'Brien and Gere " AA

INJECTION LOGBOOK " shows 0.0228 mg/L. The 0.0228 mg/L is in QC limits, 0.020mg/L would not be in QC limits, all data, except for one which is over the AA calibration range, is usable.

As (5-5-87) The date on the " AA INJECTION LOGBOOK " is listed as 5-4-87 while the raw data provided by O'Brien and Gere is dated 5-5-87. The Laboratory Control Sample, Spike and Continuing Calibration Verification are all less than QC limits. The data of interest from this days run was a rerun of the one sample from the As run of 5-4-87 that exceeded the instrumental calibration range. This one result (0.070 mg/L) is to be used as an estimate. Estimated negative bias for that one result is 30%.

Fe No Preparation Blank. The seven of the nine samples analyzed that had data less than Detection Limit are usable. The remaining two samples are usable since results are 81 and 200 times the Detection Limit. The fact that seven samples from this analysis had data less than the Detection Limit can be used to show that the levels of Fe found in the remaining two samples analyzed were not derived from laboratory contamination.

Zn No Preparation Blank. The eight of the nine samples analyzed that had data less than Detection Limit are usable. The remaining one sample greater than Detection Limit is usable since the result is 880 times the Detection Limit. The fact that eight samples from this analysis had data less than the Detection Limit can be used to show that the levels of Zn found in the remaining sample analyzed was not derived from laboratory contamination.

Mn No Preparation Blank One result less than Detection Limit is usable, one result (0.026 mg/L) is to be used as an estimate. The Laboratory Control Sample, with a known value very close to the Detection Limit, was within QC limits indicating no significant contamination in sample preparation and analytical procedures therefore all other data considered usable.

Ni Laboratory Control Sample and Continuing Calibration Verification less than QC limits. All data to be used as estimates. Estimated negative bias in range of 15-25 %.

Cu Continuing Calibration Verification less than QC limit. Data to be used as estimates.

Cr Continuing Calibration Verification less than QC limit. All data to be used as estimates. Estimated negative bias for data of 20%.

Hg Holding time exceeded by 8-10 days and Continuing Calibration Verification less than QC limits. All data are estimates.

Sb Laboratory Control Sample and Continuing Calibration Verification greater than QC limits. All data are less than Detection Limit, all data usable.

Ag Continuing Calibration Verification less than QC limit. All data to be used as estimates.

Se Laboratory Control Sample and Continuing Calibration Verification less than QC limits. Data to be used as estimates. Estimated negative bias in data of 20%.

Total Dissolved Solids and Sulfate data from Groundwater Round 2 are to be used as estimates. Holding times were exceeded by approximately 30 days. No raw data provided.

Groundwater Analysis -- Round 3

For all parameters one of the calibration standards was used as the Initial Calibration Verification, not after but during the calibration. Therefore the Initial Calibration Verification's don't provide any information about the validity of the calibration curve.

Cd Continuing Calibration Verification greater than QC limit. Data less than Detection Limit usable, data greater than Detection Limit to be used as estimates. Estimated positive bias of 10%. To make data greater than Detection Limit usable multiply by 0.9.

As Continuing Calibration Verification greater than QC limit. Data less than Detection Limit usable, data greater than Detection Limit to be used as estimates. Estimated positive bias of 15%. To make data greater than Detection Limit usable multiply by 0.85.

Ni Continuing Calibration Verification less than QC limit. Data to be used as estimate. Estimated negative bias of 15%. To make data greater than Detection Limit usable multiply by 1.15. To make data less than Detection Limit usable change Detection Limit to 0.02 mg/L.

Cr Continuing Calibration Verification less than QC limit. Data to be used as estimate. Estimated negative bias of 10%. To make data greater than Detection Limit usable multiply by 1.10. To make data less than Detection Limit usable change Detection Limit to 0.006 mg/L.

Hg Holding time criteria exceeded by 24 days. Data is questionable, possibility of false negatives exists.

Se Continuing Calibration Verification less than QC limit. Estimated negative bias of 10 %. Data to be used as estimates. To make data less than Detection Limit usable change Detection Limit to 0.003 mg/L.

Groundwater Analysis -- Round 4

For all parameters no Preparation Blanks were utilized. The purpose of Preparation Blanks is to monitor the analysis process in the laboratory for contamination. Since no Preparation Blanks were utilized, it is difficult to determine the usability of results that are near the Detection Limit.

Cr Initial Calibration Verification less than QC limit. All data are to be used as estimates. Estimated negative bias of 12%. To make data less than Detection Limit usable change Detection Limit to 0.006 mg/L.

Sb Laboratory Control Sample less than QC limit and Continuing Calibration Verification greater than QC limit. All data are to be used as estimates due to the variability in the QC criteria.

Total Dissolved Solids and Sulfate No Laboratory Control Sample. All data are to be used as estimates.

Slag Pile Runoff Sediments & Stormwater

All data are usable.

Soils Analysis (samples taken 4-7-87; D5689-D5703)

All data are usable.

This review also includes comments on the data for Slag Pile, Soil and Groundwater analysis round 1 as represented by O'Brien and Gere's QA/QC summary in the Draft R.I. report. However I did not review any raw data from Slag Pile, Soil and Groundwater analysis round 1. Detailed below are our comments.

Slag Pile and Soil Analyses

Hg Data less than Detection Limit are usable. Data greater than Detection Limit are to be used as estimates.

Se (3-23-87) All data are unusable. Due to poor Continuing Calibration Verification recovery and extremely poor Spike Sample Recovery.

Se (4-24-87) All data to be used as estimates. Estimate negative bias of 30% for EP Tox samples. Estimated range of negative bias of 30-50% for slag samples.

Cu All data to be used as estimates. Estimate negative bias of 50%.

Ba All data to be used as estimates. Estimate negative bias of 50%.

Zn All data are unusable, due to very poor Sample Spike Recovery.

Sb All data are estimates.

Groundwater Analysis - Round 1

Sb All data are to be used as estimates.

As (2-23-87) All data are to be used as estimates. Estimate negative bias of 15%.

As (2-24-87) Data less than Detection Limit usable, data greater than Detection Limit are to be used as estimates. Estimate positive bias of 20%.

Cd (3-5-87) All data are to be used as estimates. Estimate negative bias of 20%.

Cr All data are to be used as estimates. Estimate negative bias of 20%.

Cu Data less than Detection Limit usable, data greater than Detection Limit are to be used as estimates. Estimate positive bias of 20%.

Pb Data less than Detection Limit usable, data greater than Detection Limit are to be used as estimates. Estimate positive bias of 30%.

Ni All data are to be used as estimates. Estimate negative bias in range of 25-30%.

Se All data are to be used as estimates. Estimate negative bias of 20%.

Fe All data are questionable.

Cd 3-6-87: Data is considered usable.

Hg 2-23-87: Data is considered usable.

Ag 3-5-87: Data is considered usable.

Total Dissolved Solids analyses: All data are estimates.

cc:Karl Reed, IEPA
Ron Turpin, IEPA

O'BRIEN & GERE

February 29, 1988

Director, Waste Management Division
USEPA, Region V
Attn: Mr. Brad Bradley (5 HE-12)
230 South Dearborn Street
Chicago, Illinois 60604

Director, Illinois Environmental Protection Agency
Attn: Mr. Kenneth M. Miller
2200 Churchill Road
Springfield, Illinois 62706

Re: NL Granite City RI/FS

File: 2844.012.305

Gentlemen:

We have been instructed by Mr. Stephen W. Holt of NL Industries, Inc. to forward the enclosed analytical data for Rounds 2, 3, and 4 of the above-referenced project, pursuant to Mr. Holt's telephone conversation with Mr. Kenneth M. Miller, IEPA, on February 26, 1988.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

Frank D. Hale
Research Manager

FDH:jd/53:11

Enclosure:

cc: Mr. S.W. Holt - NL Industries

5HE-12

OCT 30 1987

Stephen W. Holt
Senior Environmental Engineer
NL Industries, Inc.
Environmental Control Department
P.O. Box 1090
Hightstown, NJ 08520

Dear Mr. Holt:

As discussed in our October 23, 1987 phone conversation, enclosed is a copy of the U.S. EPA - Region V Quality Assurance Office comments with respect to O'Brien & Gere's Data Review relative to the first round of samples for the NL Industries - Granite City, Illinois RI/FS. The first round data are acceptable for use, with the qualifications noted in the enclosure.

If you have any questions concerning this matter, please contact me at (312) 886-4742.

Sincerely yours,

Brad Bradley, RPM
CERCLA Enforcement Section

Enclosure

cc: Ken Miller

BB 10/29/87

bcc: R. Diefenbach, w/o enclosure
R. Grimes, ORC w/enclosure
I. Levin, 5SCRL w/o enclosure

5HE-12:CERCLA:IL/IN:BBRADLEY:lb:10/26/87:DISK #4

page 1 of 2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE:

SUBJECT: Review of Region V CLP Data
Received for Review on 12-10-87

FROM: Curtis Ross, Director (ESCRL)
Central Regional Laboratory

TO: Data User: _____

_____

We have reviewed the data for the following case(s).

SITE NAME: A. L. Industries/Jersey SMO case No. PRP
N.J./Activity

Following are our findings: This review covers 15 ground water samples analyzed for 16 parameters, 25 soils analyzed for lead and total percent solids and 29 soil/sediment samples analyzed for 14 parameters.

For water samples. There is no raw data provided for sulfate and TDS.

For all parameters one of the calibration standards was used as initial calibration verification not after the calibration but during the calibration. This means that ICV's don't provide any information about how good or bad the calibration was.

The laboratory did not do the duplication on the samples, but they did spike duplicates

( ) Data are acceptable for use.
(X) Data are acceptable for use with qualifications noted above. (next page)
( ) Data are preliminary - pending verification by Contractor Laboratory.
( ) Data are unacceptable.

cc: Duane Geuder, Quality Assurance Officer, EPA Support Services
James Petty, Chief Quality Assurance Research, EMSL, Las Vegas

EPA FORM 1320-6 (Rev. 5/87)

DATA QUALIFIERS

Laboratory: _____ Case PEL

Below is a summary of the out of control audits and the possible effect on the data for this case:

and it was reported in as duplicate samples. The CCV for Sb analyzed on 3.2.87 was low (88%). Detection limit may be bias low. All Sb data are estimated.

2. The CCV for As analyzed on 3.23.87 was low (86%). Detection limit may be bias low. All As data are estimated.

3. The CCV for As analyzed on 2.24.87 was high (121%). All samples with concentrations less than DL are acceptable. All As data for samples with concentrations higher than IDL are estimated.

4. As analyzed on 2.3.87 is not reported on the cover page. The CCV for As is low (86%). All As data are estimated.

5. The CCV for Cd analyzed on 3.5.87 was low (81%). All Cd data are estimated.

6. The CCVs for Cr analyzed on 3.4.87 were low (78, 75%). Detection limit could be bias low. All Cr data are estimated.

7. The CCVs for Cu (125%, 122%) were high. All Cu data are acceptable due to sample concentrations less than DL.

8. The CCV for Pb analyzed on 2.27.87 is high 127%. All Pb data less than DL are acceptable. All Pb data higher than DL are estimated.

Reviewed by: _____

Phone: _____

Date:

DATA QUALIFIERS

Contractor: _____ Case 22F

Below is a summary of the out of control audits and the possible effect on the data for this case:

a. The CCV for Pb analyzed on 3.10.87 is low (75%). All Pb data are estimated.

b. There is no preparation blank analyzed for Fe. The laboratory did not run any check samples (ICV, CCV) for Fe. All Fe data are questionable.

c. Spike sample recovery for Se was low (69%) on 2.26.87. Detection limit for Se could be elevated. All Se data are estimated.

All other QC audits for groundwater are acceptable.

For soil samples

There is no raw data provided for total percent solids. For all parameters one of the calibration standards was used as ICV not after the calibration but during the calibration. This means that ICV's don't provide any information about the calibration.

The duplicates were done on spike duplicate samples not on the sample. There is no digestion log for soil samples. It is not clear what wet of sample was used.

Everything reported in ug/L not in ug/kg what is more preferable for

Reviewed by: _____

Phone: _____

Date: _____

DATA QUALIFIERS

Contractor: _____ Case PER

Below is a summary of the out of control audits and the possible effect on the data for this case:

Soil samples

1. The CCV for Hg analyzed on 3.13.87 was high (130%). All Hg data less than QL are acceptable. All positive hits Hg data are estimated.

2. The CCVs for Se analyzed on 3.23.87 and 4.24.87 were low. Spike recovery for Se on 3.23.87 was 0%. Spike recoveries for Se on 4.24.87 were 71% for EPTox sample and 48% for slag sample. All Se data from 3.23.87 are unusable. All Se data from 4.24.87 are estimated (for slag and EPTox).

3. Spike recoveries for Cu 3.18.87 (42%); Zn 4.8.87 (2.2%); Ba 4.13.87 (48%) are shown above. All Cu, Ba data are estimated. All Zn data are unusable.

All other QC audits for soils are acceptable.

Reviewed by: [illegible]

Phone: 886-197=

Date: 10.12.87

NL

September 24, 1987

CERTIFIED MAIL - RRR

Director
Waste Management Division
USEPA, Region V
Attn: Mr. Brad Bradley (5HE-12)
230 S. Dearborn Street
Chicago, IL 60604

Director
Illinois Environmental Protection Agency
Attn: Mr. Ken M. Miller
2200 Churchill Road
Springfield, IL 62706

Re: NL/Taracorp Site
Granite City, Illinois
Quality Assurance Review

Dear Gentlemen:

The attached "Review of Data" relative to the first round of analyses conducted for the Granite City RI/FS, as developed by O'Brien & Gere Engineers, is submitted to address the comments and/or inquiries of the Illinois Environmental Protection Agency and/or the U.S. Environmental Protection Agency, Region V. The attached will address the QA/QC issues in context with the overall project objectives.

Since the majority of the data fell within the QA/QC objectives, as set forth in the Quality Assurance Project Plan (QAPP) and/or is responsive to the project objectives, NL concurs with O'Brien & Gere's evaluation that "...the quality of all the data generated was sufficient to render the data usable in terms of the overall objectives of the project."

NL Industries, Inc.
Environmental Control Department
P.O. Box 1090, Hightstown, N.J. 08520 Tel. (609) 443-2405

Accordingly, NL is continuing to address the Remedial Investigation activities in accordance with the approved RI/FS Work Plan Addendum, submitted July 10, 1987. Further, we have been advised that every effort is being made to assure that future data is consistent with Quality Assurance objectives and the objectives as set forth in the RI/FS Work Plan.

Please do not hesitate to contact me at (609) 443-2405 if you should have questions regarding the attached.

Very truly yours,

Stephen W. Holt
Senior Environmental Engineer

SWH/bt
attachment

cc: F. D. Hale, OBG (w/o attach)

O'BRIEN & GERE

RECEIVED

SEP 17 1987

ENVIRONMENTAL CONTROL

September 16, 1987

Mr. Stephen W. Holt
Senior Environmental Engineer
Environmental Control Department
NL INDUSTRIES, INC.
P.O. Box 1090
Wyckoff Mills Road
Hightstown, NJ 08520

Re: NL Granite City RI/FS

File: 2844.012

Dear Steve:

Pursuant to your recent request, we are providing you with our review of data generated during the initial phase of the Remedial Investigation (RI) at the NL Granite City Site in Granite City, Illinois. The review addresses the IEPA's comments transmitted to you by Mr. Ken Miller on July 22, 1987 and comments received by you from Mr. Jay Thakkar (USEPA) during recent telephone conversations. The review is intended to aid you in your review of the data relative to QA/QC issues.

The data reviewed include the slag pile, soils, and first round ground water analytical results.

The Quality Assurance Project Plan (QAPP) for the Granite City RI/FS included quality assurance objectives for measurement data in terms of precision, accuracy and completeness for the various matrices analyzed. In addition, quality control objectives were intended to be consistent with those established for the USEPA's Contract Laboratory Program (CLP) for inorganics. The data have been reviewed in accordance with the QA/QC objectives set forth in the QAPP.

In addition, the data have been reviewed relative to the overall objectives of the project, which were matrix specific. The analytical results for the slag pile and soil samples were for characterization purposes as there are neither state nor federal standards for slag or soils. The data generated for the slag pile were intended to determine whether the materials in the pile are hazardous or non-hazardous, if the constituents are mobile (soluble), and if metal concentrations are sufficient to warrant recycling of the materials. In other words, the data for the slag pile were intended to be used to evaluate management alternatives for the slag pile. Management of the pile is intimately related to the lead concentration in the pile, since lead would be expected to be the metal of highest concentration. The other data are used primarily to characterize the constituents of the pile. The surface

soil samples were collected and analyzed to estimate public health and environmental concerns related to lead exposure. Ground water samples were analyzed to determine the extent of ground water contamination in the vicinity of the site. The ground water in this area does not serve as a source of drinking water. The data have also been reviewed relative to the overall project objectives to determine the usability of the data.

The review of data indicated that QA/QC objectives specified in the QAPP were generally met. Those instances where they were not met are discussed below. Subsequent review of the data relative to the overall objectives of the project indicated that all of the data are usable in that they are of sufficient quality to be used in their intended function.

It should be noted that some data inadvertently included in the QA/QC documentation was not a part of this project. Accordingly, IEPA comments regarding the May 1987 data are not addressed because they are not applicable to this project. Only the samples analyzed in March and April 1987 were for the Granite City RI/FS.

Slag Pile and Soils Analyses

A total of 29 samples from the slag pile were analyzed for 14 parameters for a total of 406 individual analyses. Eighty-five soil samples were analyzed for lead. The review of the data for the slag pile and soil samples indicated that for the most part the QA/QC objectives as defined in the QAPP were attained. The following is a narrative of the specific instances where the QA/QC analyses were not in compliance with the QA/QC objectives. All of the data, however, are usable relative to the overall objectives of the project. Again, please note that the slag and soil samples were analyzed for characterization purposes and that no state or federal standards exist for these materials.

1. The initial calibration verification (ICV) for mercury analyzed on March 13, 1987 was 78%, which is less than the lower acceptance limit of 90%. The ICV concentration was close to the lower sensitivity of the procedure, where precision is highly variable. The other concentrations on the calibration curves were all within the acceptance range. The raw data from the mercury injection logbook indicate that mercury was detected, but at concentrations near or below the instrument detection limit of 0.5 ppb. In terms of the overall project objectives for the slag pile, the data are usable. Adjustments to the data to correct for the ICV do not significantly change the results.

2. The continuous calibration verification (CCV) for mercury on March 13, 1987, at 130%, was above the upper acceptance limit of 110%. The CCV concentration here was also close to the lower sensitivity of the procedure, where precision is in question.

However, the data reported after this CCV was analyzed, with one exception, were all below the instrument's detection limit. Accordingly, the data are usable.

3. The CCV for selenium on March 23, 1987 and April 24, 1987 were below the lower acceptance limit of 90%. The CCV's on March 23, 1987 were 82.5% and 64%. The analytical data associated with the CCV's were all less than the detection limit of the instrument. Adjusting the data for the low CCV's does not change the data relative to the project's objectives and the data are usable. The CCV for selenium on April 24, 1987 was 71%. In this case, the CCV concentration was less than the instrument detection limit. All reported data associated with the CCV had concentrations less than the detection limit. Adjustments of the data do not change the results relative to the overall project objectives. These data are usable.

4. The spike recovery for copper on March 18, 1987 was 42%, compared to the range of 100% ± 25% specified by the QAPP. Spikes are used to determine the accuracy of the analytical method. The nature of the material making up the slag pile is such that one could not expect the analytical results to be highly accurate. The results are usable since they are intended to be used in characterizing the slag pile materials.

5. The spike recoveries for zinc analyzed on April 6, 1987 were 2.2% and 140%, which are outside the range specified in the QAPP of 100% ± 25%. These recoveries reflect the variability of the slag pile material. All other QC data are within the specified guidelines. The data are usable in that they are intended to be used for characterization purposes only.

6. The spike recovery for selenium on March 23, 1987 was 0%. There were matrix problems with the spike sample. The other QC samples analyzed along with the spike met or were just outside of the QAPP requirements. Since the data are intended for characterization purposes, the data are usable.

7. The spike recovery for selenium in the EP Toxicity sample on April 24, 1987 was 71%, which is just outside of the range specified in the QAPP. The EP Toxic concentration for selenium is 1 mg/l. The analytical results indicate the selenium concentration in the extract was less than the detection limit of 0.02 mg/l. Adjusting these data based on the spike recovery results in the same conclusion, that the samples did not exhibit the hazardous characteristic of EP Toxicity based on selenium.

8. The spike recovery for selenium in the slag sample analyzed on April 24, 1987 was 48%. As indicated in Item 6 above, matrix effects were a primary concern in the spike recovery for selenium. The data are usable based on the overall objective to use the data for characterization purposes.

9. The spike recovery for barium on April 13, 1987 was 48%. The other QC data associated with this spike sample met the requirements of the QAPP. Once again, the accuracy of the analysis is impacted by the matrix. The data are usable for characterization purposes.

10. No spike sample for antimony in slag was analyzed since the analytical results indicated the antimony concentration was four times greater than the spiking level. This being the case, the sample should have been analyzed in duplicate and the relative percent difference (RPD) reported. The EPA known and ICV analyses met the requirements of the QAPP, and the CCV was just outside the range specified by CLP. The data are usable for characterization purposes.

11. The duplicate samples for copper on March 18, 1987 had a RPD of 35% which is not within the acceptance limits. The data are usable for characterization purposes.

12. The laboratory control sample (LCS) for barium on April 13, 1987 was 130% which is out of the acceptable range of 100% ± 10%. The LCS concentration was close to the detection limit where precision is poor. The elevated LCS concentration observed would imply that the analytical results were also elevated. As the absolute concentration of barium in the slag samples is not critical to the objectives of the data, the data are usable.

13. The LCS for selenium on April 24, 1987 was 70.8%. The samples associated with this LCS were slag samples analyzed for EP Toxicity. The observed sample results were all less than the detection limit of 0.02 mg/l. Adjusting the sample results due to the depressed LCS result does not change the conclusion that the samples do not exhibit EP Toxicity for selenium.

To summarize the QA/QC review of the slag and soil analyzes, although not all the QA/QC objectives were met, all the data are usable in terms of the overall objectives of the project.

Ground Water Analysis

Twelve ground water samples were analyzed for 16 parameters and three additional samples were analyzed for total lead, resulting in a total of 195 analyses. The review of the QA/QC analyses for the ground water samples indicated that the QA/QC objectives were met in most cases.

In those cases where certain QA/QC objectives were not attained, the corresponding sample results were determined to be usable relative to the overall objectives of the project. Those specific instances where discrepancies in the QA/QC samples were identified are discussed below:

1. The CCV for antimony analyzed on March 2, 1987 was 87.5% which is just outside the CLP acceptance range of 100% ± 10%. All the sample results associated with this CCV were less than the detection limit of 20 ppb. The data are usable.

2. The ICV for arsenic analyzed on February 23, 1987 was below the acceptance range. The ICV was 86.5% which is just below the lower acceptable limit of 90%. All but one of the samples associated with this ICV were at or below the detection limit of 5 ppb. The sample that was above the detection limit had a concentration of 11 ppb. The applicable standard for arsenic (State of Illinois Public and Food Processing Water Supply Standards) is 50 ppb. Adjusting the data to reflect the low ICV does not change the conclusions based on the applicable standard. Accordingly, the data associated with this ICV are usable.

3. The CCV for arsenic analyzed on March 23, 1987 was 86%, just below the lower acceptance limit of 90%. The CCV was 86%. The discussion presented in item 2 above holds true for this case. The data associated with this CCV are usable.

4. The CCV for arsenic analyzed on February 24, 1987 was 121%, which is above the upper acceptance limit of 110%. Three of the four samples associated with the CCV were below or just above the detection limit, whereas the other was above the detection limit and above the applicable standard for arsenic of 50 ppb. Adjusting the sample results for the elevated CCV does not change the conclusions relative to the applicable standard. The two samples that are below the detection limit remain below the detection limit. The sample that is just above the detection limit remains just above the detection limit. The sample whose concentration was above the applicable standard remains above the standard. The data associated with this CCV are usable.

5. The CCV for cadmium analyzed on March 5, 1987 was 80.7%, which is below the lower acceptance limit of 90%. All of the sample results associated with this CCV were at, below, or just above the detection limit which was 1 ppb. The applicable standard for cadmium (State of Illinois Public and Food Processing Water Supply Standards) is 10 ppb. Adjusting the data for the CCV results in all data still being below the applicable standard and does not change the conclusions relative to the applicable standard. The sample results associated with the CCV are usable.

6. The CCV's for chromium analyzed on March 4, 1987 were below the lower acceptance limit of 90%. The CCV's were 78.5% and 84.5%. The sample results for chromium were all less than the detection limit of 5 ppb. The applicable standard for chromium (State of Illinois Public and Food Processing Water Supply Standards) is 50 ppb. The conclusions do not change relative to the detection limit and applicable standard when adjusted for the CCV's. The sample results associated with the CCV's are usable.

7. The CCV's for copper analyzed on March 4, 1987 were 125% and 122%, which were above the upper acceptance limit of 110%. All the sample results for copper were below the detection limit of 10 ppb, with one exception. One sample was analyzed at 20 ppb copper, which is the applicable standard (State of Illinois General use Water Quality Standards) for copper. Adjustment of the data based on the elevated CCV's would not affect the less than detectable results. The sample result which was at the applicable standard would be less than the standard if adjusted for the CCV. The conclusions do not change since all samples meet the water quality standard for copper. The sample results are usable.

8. The CCV for lead analyzed on February 27, 1987 was above the upper acceptance limit of 110%. The CCV was 128%. Three samples for the NL Granite City project were associated with this CCV. One result was below the detection limit of 5 ppb, one was at the detection limit, and one was just above the detection limit (6 ppb). The applicable water quality standard for lead is 50 ppb (State of Illinois Public and Food Processing Water Supply Standards). Adjusting the sample results based on the elevated CCV would result in all three being below the detection limit. The adjustment would not affect the conclusions relative to the applicable water quality standard. These data are usable.

9. The CCV's for nickel analyzed on March 4, 1987 were 70.8% and 75.6%, which were below the lower acceptance level of 90%. Ten of the twelve samples analyzed were below the detection limit of 10 ppb. The two results above the detection limit were 20 ppb and 50 ppb. The applicable standard for nickel is 1,000 ppb (State of Illinois General Use Water Quality Standards). Adjusting the sample results based on the CCV's does not change the conclusions with respect to the applicable standard. The sample results are usable.

10. The CCV's for selenium analyzed on February 26, 1987 were below the lower acceptance limit of 90%. The CCV's were 78% and 83%. All the sample results were less than the detection limit of 2 ppb. The applicable standard for selenium is 10 ppb (State of Illinois Public and Food Processing Water Supply Standards). Adjusting the sample results based on the CCV's does not change the conclusions drawn from the data relative to the applicable standard. Accordingly, the data are usable.

11. Iron analyses were conducted on February 19, 1987 with no preparation blank analyzed. The sample preparation step consisted of filtration. The sample results indicate that ten of the twelve samples are below or just above the detection limit of 10 ppb. The sample results appear to be in control. The conclusions drawn from the data do not change due to the lack of preparation blank.

12. One of the spike samples for lead analyzed on February 27, 1987 was below the lower acceptance limit of 85%. The spike recovery was 69.5%. Three sample results are associated with this spike. One sample result was less than detectable, one was at the detection limit (5 ppb) and one was just above the detection limit (6 ppb). The applicable standard for lead is 50 ppb. The sample results are an order of magnitude less than the standard. The conclusions drawn from the data do not change upon consideration of the unacceptable spike recovery. The data are usable.

13. The spike sample recoveries for antimony analyzed on March 2, 1987 were below the lower acceptance level of 85%. The spike recoveries were 81.2% and 79.6%. All the sample results were less than the detection limit of 20 ppb. There is no state or federal standard for antimony. The conclusions drawn from the data do not change even though the spike recoveries were lower than the acceptable range. The data are usable.

14. The spike sample recovery for arsenic analyzed on February 24, 1987 was 117% which is just above the acceptance limit of 115%. Three sample results are associated with this spike. Two are less than the detection limit of 5 ppb and one (77 ppb) is greater than the applicable standard of 50 ppb. The conclusions based on the data do not change upon consideration of the spike recovery. Accordingly, the data are usable.

15. The spike recovery for cadmium analyzed on March 6, 1987 was 78.4%, which is below the lower acceptance limit of 85%. Two of the five sample results associated with this spike recovery were an order of magnitude less than the applicable standard for cadmium of 10 ppb. The other three were above the applicable standard. The conclusions drawn from these data do not change upon consideration of the spike sample. The data are usable.

16. The spike recovery for copper analyzed on March 4, 1987 was 117%, which was just above the upper limit of 115%. All the sample results associated with this spike sample were less than the detection limit of 10 ppb. The conclusions drawn from the data do not change upon consideration of the elevated spike recovery. The data are usable.

17. Two spike sample recoveries for mercury analyzed on February 23, 1987 were just outside the acceptable range of 100% ± 15%. The spike recoveries were 83% and 120%. The sample results for these spike recoveries were all less than the detection limit of 0.5 ppb. The conclusions drawn from the data do not change upon consideration of the spike recoveries, and the data are usable.

18. A spike sample recovery for selenium analyzed on February 26, 1987 was below the lower acceptance limit of 85%. The spike recovery was 69%. The sample results for selenium were all less than the detection level of 5 ppb, which is compared to the applicable standard of 10 ppb. The conclusions drawn from the data do not change upon consideration of the spike sample recovery. The data are usable.

19. The spike sample recoveries for silver analyzed on March 5, 1987 were 81% and 75%, which were below the lower acceptance limit of 85%. All the sample results associated with these spikes were less than the detection limit of 5 ppb. The state standard for silver is 5 ppb (State of Illinois General Use Water Quality Standards). The federal primary drinking water standard for silver is 50 ppb. Conclusions based on the federal primary drinking water standard are not changed upon consideration of the spike recoveries. The data are usable.

20. No LCS for iron was analyzed on February 19, 1987. The LCS would have provided information relative to the accuracy of the results. The internal QC results are all well within acceptable ranges. Ten of the twelve sample results are below or just above the detection limit of 10 ppb. The applicable standard for iron is 300 ppb. The other two sample results are well above the applicable standard. Considering that all the internal QC for iron is excellent and the sample results are either at or below the detection limit, or well above the applicable standard, the lack of a LCS does not change the conclusions drawn from the data. The data are usable.

21. Raw data for total dissolved solids and sulfate analyses were included with the QAPP data package. However, the laboratory work sheets were inadvertently left out of the data package. The laboratory work sheets for these analyses are attached. The QA/QC data for the sulfate analyses indicate that the QA/QC objectives were met for sulfate. QA/QC analyses for total dissolved solids were not reported. It should be noted that total dissolved solids were analyzed as an indicator parameter only.

In summary, all the ground water data are usable, although several discrepancies in meeting the QA/QC objectives were identified. The data are of sufficient quality to meet the overall objectives for their use in this project.

Summary

Data generated during the NL Granite City RI have been subjected to a review relative to the QA/QC objectives outlined in the QAPP and the overall objectives of the project. The data reviewed include the analytical results for the slag pile, soil, first round ground water samples. In most cases the data attained the QA/QC objectives. In those instances where discrepancies between the QA/QC sample results and QA/QC objectives were identified, the data were evaluated relative to the overall objectives for the project. The review indicated that the quality of all the data generated was sufficient to render the data usable in terms of the overall objectives of the project.

If you have any questions regarding this matter, please contact me at (315) 451-4700.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

Frank D. Hale
Research Manager

FDH:dn/27:25

cc: Mr. D. M. Crawford
Mr. D. R. Hill
Dr. C. B. Murphy, Jr.

3.4.5

SO4

O'BRIEN & GERE ENGINEERS

Laboratory Analysis Coding Form

Solids

Analysis Update

Date 2/4/87

By RMB

Analy Code	No Store	Repeats	Filtered	Sample Number	Parameter Name	Replicate No. 1 Sample Size	W1 Tare Weight	W2 103 Deg. Weight	W2-W1 550 Deg. Weight	Replicate No. 2 Sample Size	Tare Weight	103 Deg. Weight	550 Deg. Weight
003				D38557	SC4	100	18.46571	18.52800	.006223	255			
					DUP D38557		17.18119	17.24400	.006223	255			
				D38558			18.15009	18.15569	.000569	28			
					DUP D38558		15.68188	15.68811	.000623	26			
				D37556			17.09966						
				D37559			18.03722						
				A79011			18.12881						
				D35900			16.16558						
				D39002			18.39271	18.42211	.002940	121			
				D39004			18.26866	18.31922	.005056	207			
				D39006			18.23223	18.26007	.002784	116			
				D39008			18.06901	18.14665	.007764	317			
				D39010			16.51114	16.55960	.004846	142			
				D39012			17.98661	18.05775	.007114	292			
				D39014			17.97889	18.01884	.003995	162			
				D39016			18.22101	18.28432	.006331	260			
				D39018			16.29053	16.42188	.013135	539			
				D39020	BLANK		18.32889	18.32891	.000002	1			
				D39022			16.11788	16.11799	.000011				
				D39200	BLANK		18.11389	18.11440	.000051				
					SPK D38558		16.22669	16.23534	.008665	234			
					STD 100ppm		18.60671	18.63189	.002518	102			
					SPK D38557		16.92111	16.92112	.000001				
							15.92772			75			

$$mg/L\ SO_4 = (W_2 - W_1) \times \frac{1000}{ml\ of\ sample} \times 0.41 \times 1000$$

O'BRIEN & GERE ENGINEERS

Laboratory Analysis Coding Form

SO4

~~Solids~~

Analysis Update

Date 2/10/87

By RMG

Analy Code	No Store	Repeats	Filtered	Sample Number	Parameter Name	Replicate No. 1 Sample Size	Tare Weight	103 Deg. Weight	ΔW ~~550 Deg.~~ Weight	Replicate No. 2 Sample Size (× DIL. FACTOR = × A100)	Tare Weight	103 Deg. Weight	550 Deg. Weight
1 2 3	4	5	6	7 8 9 10 11	12 13 14 15 16 17 18 19	20 21 22 23 24 25 26	27 28 29 30 31 32 33	34 35 36 37 38 39 40	41 42 43 44 45 46 47	48 49 50 51 52 53 54	55 56 57 58 59 60 61	62 63 64 65 66 67 68	69 70 71 72 73 74 75
003				A7501	504	100	15.7271	15.7277	.0006	x1	2		
				A82103		100	18.0717	18.0738	.0022	x1	9		
				A77277		100	18.2177	18.2183	.0005	x1	2		
				A82344		100	15.9222	15.9281	.0058	x1	24		
				A82065		100	17.9864	17.9868	.0004	x1	2		
				D39900		20	16.2874	16.2948	.0074	x5	152	→ 150	
				D39200		10	18.3273	18.3579	.0306	x10	1254	→ 1250	
				D39222		10	18.4010	18.4390	.0380	x10	1558	→ 1560	
				D37556		20	18.2692	18.2716	.0024	x5	90	→ 90	
				D37577		10	18.3903	18.3980	.0077	x18	316	→ 320	
				D31588		20	16.5087	16.5132	.0045	x5	92	→ 90	
				D37555		10	18.1493	18.2349	.0856	x10	3510	→ 3510	
				D39699		100	18.0676	18.0792	.0116	x1	48		
				A84721	DUPD39695	100	16.5270	16.5387	.0117	x1	48		
				A84739	DUPKD39699	90	16.5382	16.5508	.0126	x10	516	→ 52	
				D25576		50	16.2509	16.2719	.0210	x2	172	→ 172	
				D25777		66	18.4659	18.4764	.0105	x1.5	65		
				D25788		29	17.1820	17.1979	.0159	x3.4	224		
				D25799		50	15.5178	15.5234	.0056	x2	46		
				D27788		50	17.9917	18.0144	.0227	x2	186		
				A84748	BLANK		14.7527	14.7528	.0001		K1	→ 102	
					STD		17.7006	17.7250	.0244		100		
				D25799		50	16.7711	16.7785	.0068	x2	56		
							18.2893	18.2891					
1 2 3	4	5	6	7 8 9 10 11	12 13 14 15 16 17 18 19	20 21 22 23 24 25 26	27 28 29 30 31 32 33	34 35 36 37 38 39 40	41 42 43 44 45 46 47	48 49 50 51 52 53 54	55 56 57 58 59 60 61	62 63 64 65 66 67 68	69 70 71 72 73 74 75

O'BRIEN & GERE ENGINEERS

Laboratory Analysis Coding Form

Solids

Analysis Update

Date 2/3/87

By RMC

Analy Code	No Store	Repeats	Filtered	Sample Number	Parameter Name	Replicate No. 1 Sample Size	Replicate No. 1 Tare Weight	Replicate No. 1 103 Deg. Weight	Replicate No. 1 550 Deg. Weight	Replicate No. 2 Sample Size	Replicate No. 2 Tare Weight	Replicate No. 2 103 Deg. Weight	Replicate No. 2 550 Deg. Weight
1 2 3	4	5	6	7 8 9 10 11	12 13 14 15 16 17 18 19	20 21 22 23 24 25 26	27 28 29 30 31 32 33	34 35 36 37 38 39 40	41 42 43 44 45 46 47	48 49 50 51 52 53 54	55 56 57 58 59 60 61	62 63 64 65 66 67 68	69 70 71 72 73 74 75
003				A79C1	TDS	25	44.6849	44.6876					
				D3900			43.8325	43.8473					
				D3902			45.1055	45.1214					
				D3904			44.8046	44.8172					
				D3906			40.8199	40.8288					
				D3908			45.1667	45.1916					
				D3910			43.2735	43.2900					
				D3912			44.9504	44.9780					
				D3914			45.1855	45.2005					
				D3916			44.2635	44.2859					
				D3918			43.3481	43.3824					
				D3920			43.5143	43.5921					
				D3922			45.7149	45.8115					
1 2 3	4	5	6	7 8 9 10 11	12 13 14 15 16 17 18 19	20 21 22 23 24 25 26	27 28 29 30 31 32 33	34 35 36 37 38 39 40	41 42 43 44 45 46 47	48 49 50 51 52 53 54	55 56 57 58 59 60 61	62 63 64 65 66 67 68	69 70 71 72 73 74 75

Illinois Environmental Protection Agency 2200 Churchill Road, Springfield, IL 62706

217/782-6761

Refer to: L1190400007 -- Madison County
Granite City/Taracorp
Superfund/Technical Reports

July 22, 1987

Stephen W. Holt
Senior Environmental Engineer
Environmental Control Department
NL Industries, Inc.
Post Office Box 1090
Hightstown, New Jersey 08520

Dear Mr. Holt:

IEPA has reviewed the data packages for samples collected in January, 1987. The packages were reviewed for compliance with the Quality Assurance Project Plan (QAPP) and referenced CLP requirements and the attached comments reflect our findings.

Analysis and data packages must be in accordance with requirements.

Should you have any questions, please feel free to contact me.

Sincerely,

Kenneth M. Miller
Federal Site Management Unit
Remedial Project Management Section
Division of Land Pollution Control

KMM:rd3130g/60

Enclosure

cc: DLPC File Room
Terry Ayers
Bina Fleck
Brad Bradley -- USEPA

Illinois Environmental Protection Agency · P.O. Box 19276, Springfield, IL 62794-9276

MEMORANDUM

DATE: July 16, 1987

TO: Ken Miller

FROM: Bina Fleck Bina

SUBJECT: Review of the Sample Analyses from the Taracorp Site, Granite City

SLAG PILE AND SOIL SAMPLES:

These samples were collected between Jan. 5, 1987 through Jan 8, 1987 and analyzed during the months of Feb., March and April, 1987. Twenty-nine slag pile samples were analyzed for 14 metals and 85 soil samples were analyzed for Pb and Total Solids. The following is our review of the data package.

Initial Calibration Verification (ICV): The IVC for Hg analyzed on 3-13-87 was outside the acceptance limit. The problem should have been corrected and the samples should have been analyzed only after the ICV was acceptable. The data produced on 3-13-87 for Hg analyses shall not be usable.

Continuous Calibration Verification (CCV): The CCV for Hg analyzed on 3-13-87, As analyzed on 5-4-87 and Se analyzed on 3-23-87 and 4-24-87 were also outside the acceptance limits. The data associated with these CCV shall not be usable.

Spikes: The spike recovery does not meet for the following parameters on the dates specified below. All the analyses associated with these spikes must be flagged.

Cu analyzed on 3-18-87	(No Spike recovery - forms are filled out)
Zn analyzed on 4-06-87	
As analyzed on 5-04-87	
Se analyzed on 3-23-87	
Se analyzed on 4-24-87	(of the leachate & soil)
Ba analyzed on 4-13-87	(two leachates)

Duplicates: The duplicate for Sb analyses has a footnote that Matrix Spike/Matrix Spike Duplicates were 4X spike levels. This sample should have been analyzed in duplicate and the RPD should have been reported.

The forms for the duplicates for analyses of Cu were not filled out, however, the information from the raw data looks like RPD did not meet the requirements. The data shall be flagged.

Laboratory Control Samples (LCS): For 114 Pb analyzed only four LCS were analyzed. Frequency should have been at least six samples.

The LCS analyzed for As on 5-14-87, for Ba on 4-13-87 and two LCS for Se on 4-24-87 and 5-22-87 are out of control. The data associated with these LCS shall not be usable.

GROUND WATER SAMPLES:

A total of 27 ground water samples were collected on Jan. 7, 10, & 17 of 1987 and analyzed during the months of March. The samples were expected to be analyzed for 14 Metals, Dissolved Solids and Sulfate. No data is available for Dissolved Solids or Sulfate and no calculation is available for any of the raw data. The detail discrepancies of the raw data are listed below by the categories:

Continuous Calibration Verification (CCV): Three CCV should have been performed instead only two were analyzed and one or both of the CCV values were outside the acceptance limits for Sb, As, Cr, Cd, Pb, Ni and Se. The data reported shall not be usable for these parameters.

Preparation Blank: No preparation blank analyzed for analyses of Fe. Preparation Blank gives important information on contamination and is one of the CLP requirements for analyses of the samples.

Spikes: One of the spikes for Pb and Se were outside the control limits. The data associated with these spikes must be flagged. No spikes results available for Hg.

Duplicates: No duplicate results available for Hg. In order to know the reproductibility of the performance, samples must be analyzed in duplicates.

Lab Control Samples (LCS): LCS is not analyzed for Fe. LCS must be present to verify the accuracy of the results.

Over all the ground water analyses were performed very well excluding above mentioned discrepancies.

When you are evaluating the results of the actual samples please keep these comments in mind, and only use the data which has acceptable Q.C.

If you have any question feel free to call me at 5-5166.

cc: Karl Reed, IEPA
Ron Turpin, IEPA